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EXAMINER

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3623

DATE MAILED: 12/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/594,652

Applicant(s)

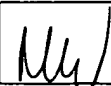
IYER ET AL.

Examiner

Eric T. Shaffer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on June 10, 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7 - 48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, and 7 - 48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This communication is in response to the amendments filed June 10, 2004.

#### ***Summary Of Instant Office Action***

2. Applicant's arguments, filed June 10, 2004, concerning claims 1 – 5 and 7 - 48 in the previous Office Action have been considered and deemed unpersuasive.

Claim 6 has been cancelled by the applicant and the applicant has not added or amended any claims since the previous office action. Claims 1 – 5 and 7 – 48 are pending and are prosecuted in the response set out below.

#### ***Allowable Subject Matter***

3. Claims 12, 26 and 41 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

#### ***Claim Rejections - 35 USC § 112***

4. Claims 1 – 4 and 7 – 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the claim language in the first step refers to "a first user interface" where a request is received from the user. The fourth step then refers to another user interface recited as "the user interface operable to present he set of one or more candidate alternative products to the user". This renders the claim indefinite because it is unclear whether the

limitation(s) following the phrase refer to two aspects of the same user interface or separate aspects of two different interfaces.

Claim 1 also recites the limitation "the user interface". There is insufficient antecedent basis for this limitation in the claim or in the specification, which recites "the user enters requests at some type of user interface" where "the details of the interface are not important to the present invention" (page 7). Applicant should more clearly describe the claimed interface.

***Claim Rejections - 35 USC § 101***

5. Claims 1 – 5, and 7 – 48 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

- (1) whether the invention is within the technological arts; and
- (2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e. abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, invoke, use, or advance the technological arts.

In the present case, the system for offering to a user one or more alternative products does not incorporate technology. In the present case, claim 1 recites a system wherein the

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specification does not mention a technology component. The claims present the series of steps of receiving a user request, searching for a product, comparing desired attributes, determining product similarity sorting products in descending order of similarity and presenting one or more candidate products do not use technology and may be performed manually or without the aid of any technology. The examiner interprets the system as presenting a series of steps that can be performed manually because no technological component is recited by the applicant in the specification. Furthermore, the specification does not recite a technological component in the definition of the user interface and recites that the details of the interface are not important.

Claim 5 presents the same steps in a method claim, but does not incorporate technology.

Claim 33 claims software for performing the above mentioned steps which is not statutory for claiming software per se or computer program per se. In order to incorporate technology, the claims need to claim a medium in which the software is installed and executed. Claim 48 presents the same steps in a system, but the system recited in the applicant's specification does not incorporate technology. The user interface also does not recite any technology component within the claims or within the applicant's specification.

Therefore, claims 1 – 5, and 7 – 48 do not affect, effect, or are affected by technology, and thus do not recite statutory subject matter. Use of a computer, a computer operable medium, or some other technology device is required for said claims to be statutory.

The claims 1 – 5, and 7 – 48, do meet the second part of the two-prong test of producing useful, concrete and tangible result, the claimed invention, however the invention does not incorporate technology.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 – 5 and 7 – 11, 13 – 25, 27 – 40 and 42 - 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linden et al. (US 6,266,649) in view of Breese et al (US 6,018,738).

As per Claims 1, 5 and 33 Linden et al teaches an automated collaborative filter based recommendation system, method and software for comparing attributes and mapping item to item similarities, where the system recommends one or more alternative products similar to a requested product, comprising:

a first user interface operable to receive a user request for a product having one or more product attributes, the user request specifying a desired attribute value for each of one or more selected product attributes, (“the user can also select a specific category such as non-fiction or romance from a drop-down menu to request category-specific recommendations”, (column 15, lines 63 - 65), and (“users of the BookMatcher service are provided the opportunity to rate individual book titles from a list of popular titles. The book titles are rated according to the following scale: 1=bad, 2=not for me, 3=ok, 4=liked it, 5=loved it”, column 8, lines 3 - 13), wherein the user interface is a drop down menu and the desired attribute is the specific category that the use has selected from the drop down menu, and wherein the rating is a user entered and specified attribute, wherein an attribute is a feature or characteristic of an item, such as a category or rating;

receiving a user request for a product is taught by Linden et al., which teaches, (“this enables the personal recommendations to be generated rapidly and efficiently, such as in real-time in response to a request by the user”, column 3, lines 34 - 36);

a search procedure operable to select a set of one or more candidate alternative products, (“a search engine and associated database for enabling users to interactively search the catalog”, column 7, lines 41 - 44) having attribute values consistent with the desired attribute values, for the product attributes, for each potential alternative product in a set of potential alternative products, (“the user can also select a specific category such as non-fiction or romance from a drop down menu to request category specific recommendations. Designating a specific category causes items in all other categories to be filtered out in step”, column 15, lines 63 - 67), wherein the products recommended are alternative products that match the entered user request based on the specific category attribute where products not matching the attribute are filtered out;

the search procedure operable to:

for each selected product attribute, compare the attribute value specified by the user with the attribute value for the potential alternative product, (“the user can select a refine your recommendations link to rate or indicate ownership of the recommended items. Indicating ownership of an item causes the item to be added to the users purchase history listing”, column 15, lines 59 – 63, and “the BookMatcher application uses the user’s item ratings profiles to generate personal recommendations”, column 8, lines 20 – 21, wherein rating is an attribute used to generate a profile and to place an item on the user history listing), to determine an attribute similarity value for the product attribute for the selected potential alternative

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product, ("each similar items list consists of the N items which, based on correlations between purchases of items, are deemed to be the most closely related to the respective popular item. Each item in the similar items list is stored together with a commonality index value, which indicates the relatedness of that item to the popular item", column 9, lines 34 - 40), wherein the items that meet the criteria defined in the rating attribute are recorded on a user history list and this list is used to calculate a list of similar items and from that a commonality index;

determine a product similarity value for the potential alternative product according to the attribute similarity values, each attribute similarity value having been determined for a product attribute by comparing the desired attribute with the attribute value for the potential alternative product, ("the commonality index values are measures of the similarity between two items, with large CI values indicating greater degrees of similarity. The commonality indexes are preferably generated such that, for a given popular-item, the respective commonality indexes of the corresponding other items take into consideration both the number of customers that are common to both items, and the total number of customers of the other\_item", column 12, line 66 – column 13, line 4), wherein a commonality index is a product similarity value that serves as a measure of the degree to which users have rated a potential alternative item as being similar to the chosen item and a popular-item is a desired item;

the set of one or more candidate's alternative products being selected according to the product similarity values for the potential alternative products, each product similarity value having been determined according to the attribute similarity values determined for each



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product attribute for which a desired attribute value is specified; A set of alternative products is anticipated by Linden et al., which teaches, "For each item of known interest, the service retrieves the corresponding similar items list 64 from the similar items table" (column 10, lines 65 - 67), wherein the commonality index is an expression of known interest and is responsible for an alternative recommended item being on the similar items table;

a sort procedure operable to rank the one or more candidate alternative products in order of decreasing similarity to the requested product determined according to the product similarity values for the one or more candidate alternative products, each product similarity value having been determined according to the similarity values determined for each product attribute. Sorting or ranking products based on similarity attribute scores is anticipated by Linden et al., which teaches "combining the sets of similar products identified into a ranked set in which rankings are based at least in-part on the similarity scores" (column 20, lines 7 - 10), wherein an alternative product is a recommended product and the rating is the attribute on which the commonality index is based;

The user interface operable to present the set of one or more candidate alternative products to the user for selection of a candidate alternative product ("the general form of such a Web page is shown in FIG. 6, which lists five recommended items", column 15, line 56). Linden does not specifically teach that both the interface for receiving input data and the user interface for retrieving data could be two different interfaces. However, Linden does teach that the data stored by the web site interface may include one or more types of information, ("the Web site 30 also includes a "user profiles" database 38 which stores account-specific information about users of the site. Because a group of individuals can share an account, a given "user" from the

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perspective of the Web site may include multiple actual users. As illustrated by FIG. 1, the data stored for each user may include one or more of the following types of information, (among other things) that can be used to generate recommendations in accordance with the invention: (a) the user's purchase history, including dates of purchase, (b) the user's item ratings profile (if any), (c) the current contents of the user's personal shopping cart(s), and (d) a listing of items that were recently (e.g., within the last six months) removed from the shopping cart(s) without being purchased ("recent shopping cart contents"). If a given user has multiple shopping carts, the purchase history for that user may include information about the particular shopping cart used to make each purchase; preserving such information allows the Recommendation Service to be configured to generate recommendations that are specific to a particular shopping cart", column 7, lines 20 - 39), wherein the purchase history, current contents, items that were recently removed are output items interface and the user's rating's profile is an input interface. Since the web site may include one or more of the above listed items, it is possible for this web site to have only one of these items. Since the user's item ratings profile is an input, this could be one item featured on a user input screen by itself, and since the current contents is one item, it could also be one item featured on a user output screen by itself. Therefore, Linden does teach two screens separately. And since Linden recites one or more, it is also possible for these screens to be combined on one screen as they are in Figure 6.

While Linden et al does teach a user interface for selecting a requested product attribute, for allowing a user to rate items, and using the rating attribute to determine a similar items list and a commonality index, Linden does not specifically teach determining a similarity value determined directly from a desired attribute value specified in the user request.

Breese et al teaches an automated collaborative filter based device that directly accepts user entered attributes (“the entity/attribute data record generator/retriever may accept entity/attribute information from the improved collaborative filter engine or alternatively directly from the user interface”, column 10, lines 10 - 13), wherein attributes consist of (“age, sex, weight, favorite food, television shows viewed, money spent on movie rentals, etc”, column 4, lines 5 – 6), to determine a similarity value based on a sum of entered attribute, (“a similarity value is determined as a sum of products of all adjusted attribute values for an entity and the normalized attribute values of the new entity”, column 17, lines 50 - 52). Both inventions are analogous art because they both are in the area of recommending items similar to items that a user has expressed an interest about by entering interests into a computer, both employ a content based collaborative filter, and both receive attributes entered by a user.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Linden et al similarity mapping invention with the Breese et al attribute matching device because this would allow a user of the Linden device to directly calculate the similarity value from attributes that the users is searching on, without going through the rating process and to use a larger set of attributes that category and rating. This would offer the benefit of allowing an individual user to enter either their own attributes would be an essential element in constructing a data set for use by the matching system. Without the ability to update data elements via a user interface, the device would merely generate results based on a non-changing, stagnant data set, with no ability to stay current and incorporate new attributes, preferences or items to be recommended. Incorporating new

data entered by a user above and beyond the initial data entered would extend the service life of the Linden invention and make it a more cost effective tool for use in marketing.

As per Claim 2, Linden et al teaches an interface wherein the first and second user interfaces are combined to function as a single user interface. The first user interface is anticipated by Linden et al which teaches in FIG. 6, wherein "the user can also select a specific category such as "non-fiction" or "romance" from a drop-down menu to request category-specific recommendations" (column 15, lines 63 – 64) and by the "Refine your recommendations" functionality in FIG. 6. The second user interface is also anticipated by Linden et al., which teaches "The general form of such a Web page is shown in FIG. 6, which lists five recommended items" (column 15, lines 53 - 54), where one interface is for input of user data entry and the other is for output of displayed data.

As per Claim 3, Linden et al teaches the system of Claim 1, further comprising:  
a database coupled to the search procedure, the database containing information identifying available products, the availability of such products, and the product attributes of such products, the search procedure operable to access the information in the database and, based on the accessed information, to exclude from the set of one or more candidate alternative products all potential alternative products for which no excess supply is available. Database storage of product information or attributes, such as title, recommendation status and cover type, is anticipated by Linden et al., which teaches "The Web server accesses a database of HTML (Hypertext Markup Language) content which includes product information pages and other browsable information about the various products of the catalog. The items that are the subject of the Recommendation Service are the titles (regardless of media format such as

hardcover or paperback) that are represented within this database” (column 7, lines 13 - 18).

Availability of the product is anticipated by Linden et al., which teaches “The system as in claim 16, wherein the items are products that are available for online purchase” (column 19, lines 55 - 56).

As per Claims 4, 20 and 35, Linden et al teaches the system, method and software wherein the second user interface, when the user selects a candidate alternative product, is operable to cause the information in the database identifying the availability of the selected candidate alternative product to be updated. An interface that allows a user to choose an alternative product and display information is anticipated by Linden et al., which teaches “From this page, the user can select a link associated with one of the recommended items to view the product information page for that item.” (column 15, lines 54 - 56). Availability of the product is anticipated by Linden et al., which teaches “The system as in claim 16, wherein the items are products that are available for online purchase” (column 19, lines 55 - 56).

As per Claims 7, 11, 21, 25, 36 and 40, Linden et al teaches the system, method and software wherein the desired attribute value for a selected product attribute comprises a maximum, minimum, or exact attribute value for the selected product attribute. A maximum and a minimum attribute value is anticipated by Linden et al., which teaches “the resulting list is then sorted in order of highest-to-lowest” (column 11, lines 25 - 27), where the first value on the list is the highest or maximum value and the last item on the list is the lowest or minimum value.

As per Claims 8, 22 and 37, Linden et al teaches the system, method and software wherein the user request further specifies one or more of a maximum attribute value and a

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minimum attribute value for each selected product attribute; A maximum and a minimum attribute value is anticipated by Linden et al., which teaches “the resulting list is then sorted in order of highest-to-lowest” (column 11, lines 25 - 27), where the first value on the list is the highest or maximum value and the last item on the list is the lowest or minimum value;

the search procedure is operable to exclude from the set of one or more candidate alternative products all potential alternative products having attribute values that do not satisfy one or more of the maximum attribute value and the minimum attribute value for a corresponding selected product attribute. The exclusion or filtering is anticipated by Linden et al., which teaches “the sorted list is filtered to remove unwanted items” (column 11, lines 26 - 27), wherein a filter is a search operation that excludes items that do not satisfy a specific criteria.

As per Claims 9, 23 and 38, Linden et al teaches the system, method and software wherein the user request further specifies a desired level of similarity for each of one or more product characteristics, each product characteristic encompassing one or more selected product attributes. A maximum and a minimum attribute value is anticipated by Linden et al., which teaches “the resulting list is then sorted in order of highest-to-lowest” (column 11, lines 25 - 27), where the first value on the list is the highest or maximum value and the last item on the list is the lowest or minimum value.

As per Claims 10, 24 and 39, Linden et al teaches the system, method and software wherein the specified desired level of similarity for a product characteristic acts as a constraint on the attribute values a potential alternate product may have to become a candidate alternative

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product. Product characteristics that can act as constraints on selecting a similar product is anticipated by Linden et al., which teaches “the list is filtered by deleting any items that (1) have already been purchased or rated by the user, (2) have a negative score, or (3) do not fall within the designated product group (e.g., books) or category (e.g., "science fiction," or "jazz")” (column 15, lines 37 - 41).

As per Claims 13, 27 and 42, Linden et al teaches the system, method and software wherein if a selected product attribute is a binary attribute, then the attribute similarity value for a potential alternative product is zero if the attribute value for the potential alternative product is not the same as the desired attribute value for the requested product and is one if the attribute value for the potential alternative product is the same as the desired attribute value for the requested product. A binary attribute search process is anticipated by Linden et al., which teaches “is\_purchased is a Boolean variable which indicates whether a popular item was purchased” (column 14, lines 50 - 52), wherein a Boolean variable is binary.

As per Claims 14, 28 and 43, Linden et al teaches the system, method and software wherein:

the user request further specifies an attribute weight for each selected product attribute; Weighting of attributes or interests is anticipated by Linden et al., which teaches “the similar items lists read from the table are appropriately weighted (prior to being combined) based on indicia of the user's affinity for or current interest in the corresponding items of known interest” (column 6, lines 15 - 18).

the search procedure is operable to determine a weighted sum of the attribute similarity values for the selected product attributes for the potential alternative product according to the attribute weights for the selected product attributes; A sum of weighted attributes is anticipated by Linden et al., which teaches “if the weight value for a given popular item is ten, and the similar items list 64 for the popular item is

(productid\_A, 0.10), (productid\_B, 0.09), (productid\_C, 0.08),

the weighted similar items list would be:

(productid\_A, 1.0), (productid\_BB, 0.9), (productid\_C, 0.8)” (column 15, lines 19 - 25).

As per Claims 15, 29 and 44, Linden et al teaches the system, method and software wherein the product similarity value for a potential alternative product comprises a global index value for the potential alternative product with respect to the requested product. A global or common index value for evaluating the similarity between alternative and requested products is anticipated by Linden et al., which teaches “the commonality index (CI) values are measures of the similarity between two items, with larger CI values indicating greater degrees of similarity” (column 12, lines 63 - 65).

As per Claims 16, 30 and 45, Linden et al teaches are the system, method and software wherein:

the user request further specifies a threshold product similarity value and the search procedure is operable to compare the product similarity value for each potential alternative



product with the threshold product similarity value and to exclude from the set of one or more candidate alternative products each potential alternative product having a product similarity value that does not satisfy the threshold product similarity value. A threshold level of values to filter attribute similarities against is anticipated by Linden et al., which teaches “the shopping cart recommendations service is preferably invoked automatically when the user displays the contents of a shopping cart that contains more than a threshold number (e.g., 1) of popular items” (column 16, lines 8 – 9) and “the service becomes available to the user (i.e., the appropriate hyperlink is presented to the user) once the user has purchased and/or rated a threshold number (e.g. three) of popular items within the corresponding product group” (column 14, lines 27 - 30).

As per Claims 17, 31 and 46, Linden et al teaches the system, method and software wherein the sort procedure is operable to limit the ranked candidate alternative products to a user-specified number. Limiting the number of ranked items to a user specified number is anticipated by Linden et al., which teaches “the sorted other items lists are filtered by deleting all list entries that have fewer than 3 customers in common” (column 13, lines 48 - 49).

20. As per Claims 18, 32 and 47, Linden et al teaches the system, method and software wherein:

the user request further specifies an attribute weight for each selected product attribute; Weighting of attributes is anticipated by Linden et al., which teaches “the similar items lists read from the table are appropriately weighted (prior to being combined) based on indicia of the user's affinity for or current interest in the corresponding items of known interest” (column 6, lines 14 - 18).

the sort procedure is operable to if two candidate alternative products are tied in that they have the same product similarity values, ranking the two candidate alternative products in order of decreasing attribute similarity value for the selected product attribute having the highest attribute weight, and if the two candidate alternative products are still tied in that they have the same attribute similarity value for the selected product attribute having the highest attribute weight, ranking the two candidate alternative products in order of decreasing attribute similarity value for the selected product attribute having the second highest attribute weight and to if necessary to break the tie, continuing with respect to one or more successive selected product attributes having lower attribute weights until the tie is broken. Using weights is anticipated by Linden et al., which teaches “if the weight value for a given popular item is ten, and the similar items list 64 for the popular item is:

(productid\_A, 0.10), (productid\_B, 0.09), (productid\_C, 0.08),

the weighted similar items list would be:

(productid\_A, 1.0), (productid\_BB, 0.9), (productid\_C, 0.8),

The numerical values in the weighted similar items lists are referred to as ‘scores’” (column 15, lines 17 - 27). Sorting these items is also anticipated by Linden et al., which teaches “the resulting list is sorted from highest-to-lowest score. The effect of the sorting operation is to place the most relevant items at the top of the list” (column 15, lines 34 - 37).

As per Claims 19 and 34, Linden et al teaches the system, method and software comprising:

accessing information identifying available products, the availability of such products,

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and the product attributes of such products and, based on the accessed information, excluding from the set of one or more candidate alternative products all potential alternative products for which no excess supply is available. Using a filter to exclude items based on alternate attributes such as the item already has been purchased, is anticipated by Linden et al., which teaches “the list is filtered by deleting any items that (1) have already been purchased or rated by the user, (2) have a negative score, or (3) do not fall within the designated product group” (column 11, lines 26 - 30).

As per Claim 48, Linden et al teaches an automated collaborative filter based system for offering to a user one or more alternative products similar to a requested product, comprising:

a user interface operable to receive a user request for a product having one or more product attributes, with which the user requests and selects and reads about products within the system. An interface where a user can enter and read data is anticipated by Linden et al., which teaches a shopping cart as “a shopping cart is a data structure and associated code which keeps track of items that have been selected by a user for possible purchase” (column 4, line 66 – column 5, line 1) and (“the user can also select a specific category such as non-fiction or romance from a drop-down menu to request category-specific recommendations”, (column 15, lines 63 - 65), and (“users of the BookMatcher service are provided the opportunity to rate individual book titles from a list of popular titles. The book titles are rated according to the following scale: 1=bad, 2=not for me, 3=ok, 4=liked it, 5=loved it”, column 8, lines 3 - 13), wherein all three of these items are interfaces where the user can enter specified attribute data.

an attribute value and weight for each selected product attribute; Attribute weights are anticipated by Linden et al., which teaches “TABLE 2 1 Weight = ( (is\_purchased ? 5:rating) \* 2

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- 5)\*  $2 (1 + (\max((\text{is purchased ? order\_date:0}) - (\text{now} - 6 \text{ months}), 0)) / (6 \text{ months}))$ " (column 14, lines 58 - 63);

threshold product similarity value; A similarity threshold is anticipated by Linden et al., which teaches "the service becomes available to the user (i.e., the appropriate hyperlink is presented to the user) once the user has purchased and/or rated a threshold number (e.g. three) of popular items within the corresponding product group" (column 14, lines 27 - 30) and ("Filter sorted list to generate recommendations list", fig 2, item 90), wherein a filter acts on a threshold value to exclude any item where the value is below a certain threshold value;

a search procedure operable to select a set of one or more candidate alternative products having attribute values consistent with the desired attribute values, for each potential alternative product in a set of potential alternative products the search procedure operable to each selected product attribute, compare the desired attribute value with the attribute value for the potential alternative product to determine an attribute similarity index value for the product attribute for the potential alternative product, ("the Amazon.com Web site includes functionality for allowing users to search, browse, and make purchases from an online catalog of several million book titles", column 4, lines 60 - 62) and ("Web server 32 communicates with various external components 40 of the site. These external components 40 include, for example, a search engine and associated database (not shown) for enabling users to interactively search the catalog for particular items", column 7, lines 42 - 44) wherein ("the user can also select a specific category such as non-fiction or romance from a drop down menu to request category specific recommendations. Designating a specific category causes items in all other categories to be filtered out in step", column 15, lines 63 - 67);

determine a weighted sum of the attribute similarity index values for the selected product attributes for the potential alternative product according to the attribute weights for the selected product attributes; A weighted sum is anticipated by Linden et al., which teaches “if the weight value for a given popular item is ten, and the similar items list 64 for the popular item is

(productid\_A, 0.10), (productid\_B, 0.09), (productid\_C, 0.08),

the weighted similar items list would be:

(productid\_A, 1.0), (productid\_BB, 0.9), (productid\_C, 0.8),

The numerical values in the weighted similar items lists are referred to as ‘scores’ (column 15, lines 18 - 27).

determine a product similarity index value for the potential alternative product according to the weighted sum of the attribute similarity index values, each attribute similarity value having been determined for a selected product attribute for which a desired attribute value is specified in the user request by comparing the desired attribute value specified in the user request by comparing the desired attribute value specified in the user request with the attribute value for the potential alternative product; A similarity index is anticipated by Linden et al., which teaches “the commonality index (CI) values are measures of the similarity between two items, with larger CI values indicating greater degrees of similarity” (column 12, lines 62 - 65), wherein a commonality index is a similarity index;

compare the product similarity index value for the potential alternative product with the threshold product similarity value and to include the potential alternative product in the set of one or more candidate alternative products if the potential alternative product has a product similarity index value that satisfies the threshold product similarity value, each product

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similarity index value having been determined according to the weighted sum of the attribute similarity index values determined for each selected product attribute for which a desired attribute value is specified in the user request; Another measure of similarity, that the same people purchased both items, is anticipated by Linden et al., which teaches “item\_P (a popular item) has two “other items,” item\_X and item\_Y. Item\_P has been purchased by 300 customers, item\_X by 300 customers, and item\_Y by 30,000 customers. In addition, item\_P and item\_X have 20 customers in common, and item\_P and item\_Y have 25 customers in common.

Applying the equation above to the values shown in FIG. 4 produces the following results:

$$CI(\text{item\_P}, \text{item\_X}) = 20 / \sqrt{300 \cdot 300} = 0.0667$$

$$CI(\text{item\_P}, \text{item\_Y}) = 25 / \sqrt{300 \cdot 30,000} = 0.0083” \text{ (column 13, lines 15 - 23).}$$

a sort procedure operable to rank the one or more candidate alternative products in order of decreasing similarity to the requested product determined according to the product similarity index values for the one or more candidate alternative products; A maximum and a minimum attribute value is anticipated by Linden et al., which teaches “the resulting list is then sorted in order of highest-to-lowest” (column 11, lines 25 - 27), where the first value on the list is the highest or maximum value and the last item on the list is the lowest or minimum value.

the user interface operable to present the set of one or more candidate alternative products to the user for selection of a candidate alternative product. A user interface with which the user selects and reads about products within the system is anticipated by Linden et al., which teaches a shopping cart as “a shopping cart is a data structure and associated code which keeps track of items that have been selected by a user for possible purchase” (column 4, line 66 – column 5, line 1).

While Linden et al does teach a user interface for selecting a requested product attribute and using an attribute to determine a similar items list and a commonality index, Linden does not specifically teach determining a similarity value determined directly from a desired attribute value specified in the user request.

Breese et al teaches an automated collaborative filter based device that directly accepts user entered attributes (“the entity/attribute data record generator/retriever may accept entity/attribute information from the improved collaborative filter engine or alternatively directly from the user interface”, column 10, lines 10 - 13), wherein attributes consist of (“age, sex, weight, favorite food, television shows viewed, money spent on movie rentals, etc”, column 4, lines 5 – 6), to determine a similarity value based on a sum of entered attribute, (“a similarity value is determined as a sum of products of all adjusted attribute values for an entity and the normalized attribute values of the new entity”, column 17, lines 50 - 52). Both inventions are analogous art because they both are in the area of recommending items similar to items that a user has expressed an interest about by entering interests into a computer, both employ a content based collaborative filter, and both receive attributes entered by a user.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Linden et al similarity mapping invention with the Breese et al attribute matching device because this would allow a user of the Linden device to directly calculate the similarity value from attributes that the users is searching on, without going through the rating process and to use a larger set of attributes that category and rating. This would offer the benefit of allowing an individual user to enter either their own attributes would be an essential element in constructing a data set for use by the matching system.

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Without the ability to update data elements via a user interface, the device would merely generate results based on a non-changing, stagnant data set, with no ability to stay current and incorporate new attributes, preferences or items to be recommended. Incorporating new data entered by a user above and beyond the initial data entered would extend the service life of the Linden invention and make it a more cost effective tool for use in marketing.



*Response to Amendments*

8. Applicant's arguments filed June 10, 2004 have been fully considered, but the same are not persuasive.

Applicant argues that Linden and Breeze do not teach the user request specifying a desired attribute value for each of one or more selected product attributes. However, the applicant does not specifically define in the claim language what specifically is an attribute. Using the broadest reasonable interpretation of a feature as an example of an attribute, Linden does teach the use of an attribute in the form of a specific category to which an item may belong, ("the user can also select a specific category such as non-fiction or romance from a drop-down menu to request category-specific recommendations. Designating a specific category causes items in all other categories to be filtered out", column 15, lines 63 - 65), wherein an attribute is interpreted to be a characteristic or trait that can be used to identify an item.

Applicant argues that Linden and Breeze do not teach a search procedure operable to select a set of one or more candidate alternative products having attribute values consistent with the desired attribute values specified in the user request for the selected product attributes. However, Breeze does teach a user request that receives user attributes and uses them to search, ("the improved collaborative filter or entity match determination engine may communicate with a user interface the input devices and output devices. In this way, the improved collaborative filter or entity match determination engine may, for example accept entity attributes and provide suggestions", column 10, lines 4 - 8).

Applicant argues that Linden and Breeze do not teach a desired value attribute specified in a user request. However, Linden teaches input of a desired attribute ("the user can select a

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specific category such as non-fiction or romance from a drop-down menu”, column 15, lines 63 - 65) and Breeze also teaches entering attributes (“the improved collaborative filter or entity match determination engine may communicate with a user interface the input device”, column 10, lines 2 - 3) and (“accept entity/attribute information from the improved collaborative filter or entity match determination engine or alternatively directly from the user interface”, column 10, lines 11 - 13). Both the Linden and the Breeze references teach allowing a user to enter an attribute and to search on said attribute.

Applicant argues that Linden and Breeze do not teach a product similarity value determined by the selected product attributes. However Linden does teach a commonality index (“these similar items lists are merged while summing the commonality index values of the list items”, column 16, lines 33 - 35), wherein the commonality index is calculated based on the requested category (“Instant Music Recommendation, or Instant Video Recommendation”, column 14, lines 19 - 20) and on the (“particular item category such as non-fiction, jazz or comedies”, column 14, lines 23 - 24) and weighted by a (“the rating value 1-5”, column 14, line 52”). In each instance, category, item category and rating, these are attributes of an item as selected and input by the user in order to specify what item being searched for by means of a similarity or commonality index.

Applicant argues that Linden and Breeze do not teach the set of one or more candidate alternative products being selected according to the product similarity values for the potential alternative products, each product similarity value having been determined according to the attribute similarity values determined for each selected product attribute for which a desired attribute value is specified in the user request. However Breeze does teach that the user specified

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input attributes can be used to select items, (“the improved collaborative filter or entity match determination engine may communicate with a user interface the input devices and output devices. In this way, the improved collaborative filter or entity match determination engine may, for example accept entity attributes and provide suggestions”, column 10, lines 4 - 8).

Applicant argues that Linden and Breeze do not teach a sort procedure operable to rank the one or more candidate alternative products in order of decreasing similarity to the requested product determined according to the product similarity values for the one or more candidate alternative products each product similarity value having been determined according to the attribute similarity values determined for each selected product attribute for which a desired value is specified in the user request. However, Linden does teach a (“the commonality index values of the list items. In step 288, the resultant list is sorted from highest to lowest score”, column 16, lines 33 - 36), wherein the high to low sorting is done by way of a similarity or commonality index.

Applicant argues that Linden fails to teach specifying desired attribute values for selected product attributes. However, Linden does teach drop down menus for selecting product categories, wherein categories into which something may be classified is an attribute selected by the user to specify a desired attribute.

Applicant argues that Linden fails to teach a search procedure that uses the user-defined attributes. However, Breeze does teach a search procedure (column 1, lines 45 - 47, “in response to a user’s query, a rank ordered list, which includes brief descriptions of the uncovered content”) and use of user-defined attributes (column 10, lines 1 - 7, “the improved collaborative filter or entity match determination engine may communicate with a user e.g.

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the input devices and output devices. In this way, the improved collaborative filter or entity match determination engine may, for example, accept entity attributes and provide suggestions”).

Applicant argues that Linden fails to teach comparing attributes and product similarities specified in a user request with other comparable product attributes in order to find alternative products. However, Breese does teach user specified attributes (column 10, lines 1 – 4, “the improved collaborative filter or entity match determination engine may communicate with a user e.g. the input devices and output devices”) and also teaches matching (column 10, lines 5 – 7, “In this way, the improved collaborative filter or entity match determination engine may, for example, accept entity attributes and provide suggestions”).

Applicant argues that Linden fails to teach a sort procedure to rank the one or more candidate alternative products based on the user defined attributes. However Breese does teach sorting and ranking (column 1, lines 45 - 47, “in response to a user’s query, a rank ordered list, which includes brief descriptions of the uncovered content”) and use of user-defined attributes (column 10, lines 1 – 7, “the improved collaborative filter or entity match determination engine may communicate with a user e.g. the input devices and output devices. In this way, the improved collaborative filter or entity match determination engine may, for example, accept entity attributes and provide suggestions”).

Applicant argues that Linden fails to teach a user interface to allow the user to enter attributes to search on. However, Linden does teach a user interface in the form of a drop down menu, (“the user can also select a specific category such as non-fiction or romance from a drop down menu to request category specific recommendations”, column 15, lines 63 - 65), where the

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category to which an item belongs is an attribute. Furthermore, Breeze also teaches multiple attribute selection, ("the improved collaborative filter or entity match determination engine may, for example accept entity attributes and provide suggestions", column 10, lines 5 - 7).

Applicant argues that there is no motivation to combine the Linden and the Breeze inventions. However, the motivation to combine is that both invention are analogous art in that they both are in the area of recommending items similar to items that a user has expressed an interest about by entering interests into a computer. The motivation to combine would be that it would be useful to allow a user to enter and search on more than one attribute because this would enable the invention to screen out more items that would not have been screened if only one attribute were used, thereby reducing the number of items that are listed in a search result and increasing the likelihood of only one item being found that most closely matches the entered attributes.

In light of the above stated facts, examiner respectfully states that applicant's arguments have been fully considered, deemed unpersuasive, and the rejections under the prior Office Action, mailed June 10, 2004 are maintained.

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***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Shaffer whose telephone number is (703) 305-5283. The Examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington D.C. 20231

Or faxed to:

(703)746-7238 [After Final communications, labeled "Box AF"]


(703) 746-7239 [Official communications]

(703) 706-9124 [Informal/Draft communications, labeled  
"PROPOSED" or "DRAFT"]

Hand delivered responses should be brought to Crystal Park 5, 2451 Crystal Drive, Arlington, VA, 7<sup>th</sup> floor receptionist.

ETS

October 1, 2004

  
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SUPERVISORY PATENT EXAMINER  
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